

genera belonging to the order whose transformations are unknown; and the observations of Stein and Macquart upon the pupæ of the latter are sufficient to prove that these aquatic insects cannot be the larvæ of *Boreus*. There remains, however, to be noticed the anomalous genus *Acentropus*, respecting whose order entomologists are so much at variance. It is barely possible that they may be the larvæ of that genus. Without, however, deciding that these insects have not arrived at their perfect state (in which case the name *Branchiotoma Spongillæ* may be applied to them), it may perhaps be the most advisable course to regard them as larvæ of some extraordinary group not hitherto detected, and, at the same time, to express a hope that persons having an opportunity of examining the *Spongilla* will endeavour to trace the transformations of this perplexing species.

XVIII. *Rough Notes on the Habits, Manners, &c. of some of the British Brachelytra.* By F. HOLME, Esq., M.E.S.

[Read 5th March, 1838.]

THE division *Coleoptera Brachelytra* of Latreille, (corresponding nearly with the old Linnæan genus *Staphylinus*,) is one of the most curious and interesting groups, in the variety and singularity of its forms, and the various localities and pabula frequented by its different genera, which our Coleopterous Fauna comprises: while in the number of its indigenous species it far exceeds any other British division of equal rank among the *Coleoptera*; its strength in this respect nearly equalling the united forces of the *Geodephaga* and *Rhynchophora*, the two groups which most nearly approach it in point of numbers. The metropolis, indeed, of the *Brachelytra* is said by Kirby and Spence to be, "as far at least as we can judge from our present catalogues, within the temperate zone, particularly in Britain." Dejean, in his catalogue, gives only 434* species: while Mr. Stephens, whose cabinet might contain in 1828, according to the supposition of Kirby and Spence, above 600 species, enumerated no less than 852 in his invaluable Systematic Catalogue published in 1829, which he increased to 892 in the second edition of his Nomenclature, published in 1833. Notwithstanding this vast increase from the numbers of Marsham, who in 1802 could record only eighty-two species under the

* In the edition of 1833, Dejean gives 789 species, European and exotic.—*Entom. Edin.*

Linnæan genus *Staphylinus*, almost every cabinet of any extent contains Brachelytrous species unnoticed by Stephens: and the recent discovery of such singular forms as the genus *Pseudopsis** of Newman, and the anomalous genera *Centroglossa* and *Deinopsis*, detected last year by my friend A. Matthews, Esq., are indications of the novelties which may be expected from researches in this quarter. Still, the *Brachelytra* have not hitherto met with that degree of attention from British Entomologists which might have been expected: the minuteness of many of the species has occasioned their being overlooked, and the want of a good English monograph, with magnified figures, and outlines of the trophi of each genus,† combined with the small size of the insects, and the great number of closely allied species contained in some genera, has attached a discouraging degree of difficulty to the investigation of these insects, and in too many instances has caused the drawers containing the *Brachelytra* to be left a confused crowd of specimens, without any attempt at nomenclature or arrangement. It is to be hoped that the daily increasing zeal with which Entomology is now cultivated in these islands will soon remove from our naturalists the stigma of having neglected a group which its geographical distribution places so especially under their charge.

The habits, food, and localities frequented by the various genera and species of this extensive division, present so much diversity, that I trust I may be excused by the Entomological Society for submitting to their notice the following rough Notes on such points as have fallen under my own notice in my entomological rambles, in the course of which I have always paid particular attention to the manners of these insects. I do not flatter myself that my remarks will contain much new matter, but I shall be amply satisfied if they give an impulse in the same path to the curiosity of some more keensighted observer. I have arranged my remarks in the order of genera given in the last edition of Stephens's Nomenclature.

The minute species composing the curious family *Pselaphidæ* seem, as far as my observation on them extends, to be the most retiring and subterraneous in their habits of all *Brachelytra*, being rarely found fairly above ground, or even immediately under

* A second specimen of the *Pseudopsis* has been taken by Mr. Matthews at Shotover Hill, near Oxford.

† The beautiful figures of Curtis, as far as they go, leave nothing to be wished for in this respect; but unfortunately they include but few genera, and among these but a small proportion are from the minute *Aleocharæ* and *Stenidæ*, which most require illustration.

stones, &c., but generally imbedded in the loose earth at the roots of grass, or lurking under wormcasts and in the midst of thick damp clusters of moss. They seem to affect the neighbourhood of ants' nests, and I found once a species (I think *Arcopagus bulbifer*) torpid among a conglomerated lump of ants: a curious circumstance, since, if I remember right, Messrs. Kirby and Spence mention the fact of the rare *Atemeles strumosus* having been found in a similar situation. The species, according to Stephens, all prey on *acari*: but it is not impossible that they may also commit occasional depredations on the larvæ of the ants. The history of the *Psclaphidæ* shows remarkably the progress made of late years in the knowledge of the minute forms: only a single species, *Euplectus minutus*, was known to Marsham: Stephens, in 1833, enumerated thirty-two: and several have been since discovered.

The history of the two first genera of the *Tachyporidæ*, *Autalia*, and *Falagria*, which form the link between that family and the *Psclaphidæ*, appears to be somewhat imperfectly known. Most of the species are considered, probably from their small size, to be scarce or local: several new species have been detected since Stephens described them, and it is probable that on a fresh revision *Falagria* will require sub-division, as some of the species differ greatly from others in the form of the thorax.

Hygronoma dimidiata, which was almost unique when Stephens described it in his Illustrations, now seems to occur not uncommonly in various parts of the country: several specimens have been taken by Mr. Matthews at Weston-on-the-Green: it runs excessively fast.

Notwithstanding the common occurrence of *Astilbus canaliculatus*, I do not remember to have seen the fact of its being apterous anywhere noticed: I detected this at first accidentally, and verified it by the examination of numerous specimens. I think it has been stated by Mr. Stephens, though I am unable to find the passage, that *Achenium depressum* is in some specimens winged, in others apterous: but I believe the present is the only Brachyletrous species in which the wings are constantly absent. Its gait is also singular, as it runs constantly on tip toe, at the full stretch of its limbs, like the *Gœrius olens* when throwing itself into an attitude of defiance.

I have a specimen of *Atemeles acuminatus* which was taken some years since near Penzance in Cornwall, running on the stem of a nettle: I mention this because I have heard it spoken of as occurring only under stones and in similar situations.

The species formerly comprehended under the genus *Aleochara*, notwithstanding the numerous subdivisions into new genera lately adopted, still present great difficulties to the student, in the way of specific distinction, from their generally minute size and close resemblance. I must confess, also, that in this part of Mr. Stephens's work, where the descriptions of most of the species are abridged from Kirby's MSS., I do not find the same facility in naming species by their aid, as where Mr. Stephens has relied on his own powers of description. As many of the species vary greatly in size, (I have a series of *Polystoma obscurella* varying from a line and half to nearly three lines in length,) and the segments of the abdomen in preserved specimens are often so much retracted within each other as sensibly to diminish the length, it is evident that measurements will not afford the same assistance as in most families: while the differences of shade in the colouring of allied species, though obvious to the eye, are not easily marked by words, and this difficulty is increased by the fine and changeable pubescence with which most of the species are more or less clothed.

Many of the smaller species feed on decaying fungi and other vegetable matter, as well as on the *acari* and other animalcula contained in them: I have often seen them in great numbers on the heaps of or-weed on the Cornish shore, (which give shelter to innumerable minute insects,) and have ascertained by close inspection that they were feeding on the vegetable juices of the decaying weed. Several species (I remember particularly the pretty *Aleochara Cursor*) when disturbed, by bending the head under the thorax, raising the abdomen, and protruding their long slender legs straight forward, assume so completely the appearance of a ragged scrap of or-weed, that until my eye detected them in the act of metamorphosis, I was often at a loss to know what had become of the specimen which I had marked as the next victim for my bottle. In these situations they are much preyed on by the *Cafii*, which in their turn fall victims to *Broscus cephalotes* and *Creophilus maxillosus*.

The small natural group formed by *Bolitochara carbonaria*, *B. subpubescens*, *B. foveola*, &c. appears to be a maritime one; at least it is only on the seashore that I ever found them in any numbers; and the bulk of the maritime specimens considerably exceeds the dimensions assigned to each species by Stephens:—of *B. carbonaria* (which I distinguish from its allies by the pale tip of the elytra), not one, out of several specimens I lately received from Cornwall, falls short of $1\frac{1}{2}$ line, and some are more,

Stephens's measure being only a line :—*B. foveola*, which Stephens notes as rare, but which is the commonest of the group on the Cornish coast, varies from $1\frac{3}{4}$ to $2\frac{1}{4}$ lines ; Stephens's dimensions being from $1\frac{1}{2}$ to $1\frac{3}{4}$ lines.

Bolitochara inquinula, said by Stephens to be rare, is not uncommon in Gloucestershire and Lancashire, in putrid fungi, in autumn.

Bolitochara atriceps, said by Stephens to be "not very common," I found in abundance in decaying fungi in Winstanley Park, near Wigan in Lancashire, in September: it is an extremely pretty species, bearing great resemblance in the disposition of its colours, as well as in its habitat, to the *Bolitobii*, though differing altogether in form.

The rare and beautiful *Bolitochara collaris* is taken occasionally at Weston-on-the-Green by the Rev. A. Matthews.

Oxypoda alternans occurs in fungi in September, not very unfrequently, near Mersey Hampton, in Gloucestershire.

Gyrophæna fasciata is found occasionally near Mersey Hampton, but not very common, though I once swept a considerable number out of an agaric. The posterior edge of the thorax is rufous in immature specimens, and the abdomen and disk of the elytra nearly testaceous. Besides the two thoracic punctures noticed by Stephens, there are two other lateral ones nearly equidistant. I had at first difficulty in identifying the species, as Stephens (probably from inadvertence) assigns to it a length of only three-fourths of a line; but on reference to Marsham, whose *St. fasciatus* is quoted by Stephens as a synonym, I there find the correct dimensions, $1\frac{1}{4}$ line given.

Gyrophæna polita, said by Stephens to be "rare near London," is common near Mersey Hampton in autumn. The two larger punctures at the back of the thorax, usual in the genus, are observable in this species, though somewhat obsolete, and not noticed by Stephens. In one of my specimens, apparently immature, the base and apex of the abdomen are dull piceo-rufous, but the intermediate space deep black, thus showing a tendency to the belted abdomen of the other species.

Allochæra erythroccras. This species, which, from being marked † in Stephens's Illustrations, (though not in the last edition of his Nomenclature,) I conclude to have been considered at that time extremely rare, I took in some plenty in Winstanley Park in September. My specimens differ from Stephens's description in being a trifle larger; the rufous suture is also very narrow near the scutellum, but expands towards the apex, and the

elytra are narrowly tipped with dull rufous: the mouth also is conspicuously rufous like the antennæ.

Alcochara fuscipes never fell under my notice in Lancashire: I should have concluded it to be a southern insect, but the *Entom. Edinensis* states it to be as common in Scotland as it is in England.

Pella funesta I took in the Scilly Islands: from Stephens's account it appears to be a very rare insect.

Is *Callicerus Spencii* common in any English locality? I have heard that it is more common on sandy shores in Ireland, and some years since I availed myself of a calm to land from a yacht in Dundrum Bay, county Antrim, for the express purpose of hunting for it, as it is said to occur there; but I had no success. For my own specimens I am indebted to the Rev. G. T. Rudd.

In the two first species of *Mycetoporus*, I should have been glad if Mr. Stephens had given some additional characters for discrimination, beyond the different proportions of the terminal joint of the antennæ, as this appears to vary greatly in individuals; and, judging from my own specimens alone, most of which are in this respect *intermediate* between Stephens's two descriptions in the proportions of this joint, I should feel tempted to agree with Gravenhorst against Stephens, in considering *Myc. rufipennis* a mere variety of *Myc. analis*: "sed non nostri tantas componere lites."

The beautiful genus *Bolitobius* affords, in some of the species, a remarkable illustration of the extent to which the length of the specimen is often affected by the retraction of the joints of the abdomen within each other after death. The blue-black tip of the abdomen in the two first species is intersected by a ring of yellowish white, which is sufficiently obvious while the insect is alive and in motion: but after death it is so completely withdrawn into the preceding segment, as to be rarely visible in a cabinet specimen, unless carefully stretched in setting.

I may observe that in Gloucestershire and Lancashire, where I have principally collected in autumn, the relative frequency of *B. lunulatus* and *B. atricapillus* is the reverse of that given by Stephens for the metropolitan district, the latter being extremely common, and the former so rare, that I have only a single specimen in my cabinet, which was taken some years since in Gloucestershire. Perhaps, as *B. lunulatus* is said by Mr. Dillwynn to be "not common near Swansea," it may be a southern species relatively to the other, though the *Entom. Edin.* says that both species are "not unfrequent" there, and occur in company.

I doubt whether all the species described by Mr. Stephens may

be truly distinct, as the testaceous margins of the abdominal segments appear to be become suffused when mature: and in those in which the thorax is testaceous during life, it often becomes so much suffused in a few hours after death, that it appears to be dark piceous with testaceous margins. The delicacy of the colouring in these insects probably occasions this rapid change, which I ascertained by examining specimens minutely when alive, and dividing them afterwards from the others: but having no works on Entomology with me at the time, I was unfortunately unable to note the species.

I have nothing to add relative to the remaining genera of the *Tachyporidæ* except a few localities, which I have already communicated to the Society in the catalogue of Penzance *Coleoptera*.

With reference to the magnificent *Velleius dilatatus*, hitherto unique* as British, which stands at the head of the *Staphylinidæ* proper, it may not be amiss to mention that I was informed some time since, I think by a continental naturalist, that in addition to haunting hornet's nests for the purpose of preying on the larvæ, as noticed by Mr. Stephens, it frequents the holes perforated in trunks of trees by Longicorn and Lepidopterous larvæ, on which it feeds; issuing from this concealment only at night, when it has been occasionally taken on the trees in mothing: this may not be a new fact, but I think whatever may tend to facilitate the acquisition of so fine an insect in Britain is worth noticing.

Creophilus maxillosus. The variations in bulk of this conspicuous and well-known species may serve as an obvious example how little the mere dimensions are to be regarded as a rule of specific distinction among the *Brachelytra*, as I have above hinted in my remarks on the *Aleocharæ*. Of the specimens standing in my own cabinet, all from the same locality, (the Cornish coast,) the largest measures, with the mandibles, full 13 lines long; the smallest barely $6\frac{1}{2}$ lines, or not quite half the other: and the variations in the relative proportions of the heads and mandibles in the different species are not less obvious. Some specimens also are so completely denuded as to present scarcely a trace of pubescence on any part of the body, while others are thickly pubescent except on the head and thorax: the colour too of the pubescence varies, the lighter parts being in some white, in others greyish, and in old specimens partaking of a griseous brown. All these variations, if observed in an *Aleochara* a line long, would probably have caused its division into three or four species.

* Since this was written, a second specimen has been taken at Southend by the Rev. F. W. Hope, in the autumn of 1840.

I think this species, though nowhere uncommon, abounds more especially in the west of England: on the Cornish coast it occurs in hundreds under every heap of seaweed,* and in Devonshire I have found numerous specimens dividing the possession of a dead mole or other small carcase with *Necrophori* and other *Silphidæ*. It differs, as is well known, from most of its allies, in coiling itself up and remaining motionless, instead of assuming a hostile attitude, when disturbed: in this position the polished thorax and head are nearly concealed, and the general aspect is more that of a hairy caterpillar than a Coleopterous insect.

The three pubescent species from which Mr. Stephens has formed his genus *Trichoderma*, appear to frequent a somewhat different pabulum to their near allies the true *Staphylini*, occurring more frequently in dung, particularly cowdung, than in carcases, while the *Staphylini* frequent carcases, the dung of horses, &c. and prey frequently on living worms, &c., but are rarely found in cowdung, the favourite haunt of the *Trichodermæ*. The *Staphylini*, also, are often seen on walls and pavements basking in the sun, and one species at least, *St. erythropterus*, climbs trees with readiness, running along the branches in search of Lepidopterous larvæ, &c. on which I have frequently found it feeding:—while the *Trichodermæ* affect situations and habits more in unison with their sombre colouring, and rarely expose themselves to view unless when on the wing from one feeding place to another. The colour of the wings also varies in the two groups; those of the *Trichodermæ* being dirty ash-grey, of the *Staphylini* transparent iridescent fulvous: and though a distinction drawn from such a circumstance may appear trivial, I have noticed that similar tints in the membrane of the wing pervade natural groups so generally, throughout the *Coleoptera*, as to afford no bad diagnosis.

The *Trichodermæ* appear essentially monogamous; one pair, male and female, is generally found in possession of a mass of cowdung: the *Goërius olens* I have remarked to be equally so; and it is probable that a similar propensity pervades the *Staphylinidæ*, but from the gregarious habits of most of the species, it is less easily ascertained than in the *Trichodermæ* and *Goërii*, which mostly live in solitary pairs.

The pile or pubescence in the *Trichodermæ* appears to be remarkably fixed and close: I never remember to have met with a denuded specimen.

The species composing the genus *Staphylinus*, as now restricted,

* In Scilly, however, I took only a single specimen.

appear to arrange themselves into several small natural groups, each consisting of two or three species closely resembling each other in form and colour. The first group comprehends four species, *S. erythropterus*, *S. castanopterus*, *S. stercorarius*, *S. æriceps*: the first of these abounds everywhere; the others, as far as my own experience goes, are rare. Stephens speaks of *St. stercorarius* as "common;" the only locality where I ever found it so was the Look-out Hill, by Weymouth, of which it appeared to have exclusive possession, as I never found either of the others there. In Gloucestershire I have taken only a single specimen: it appears, however, to be pretty generally, though thinly, distributed throughout England.

Most of the specimens placed in cabinets as *St. castanopterus* are nothing more than highly coloured individuals of *erythropterus*; the true *castanopterus*, as may be ascertained by an inspection of Kirby's specimens in the collection of the Entomological Society, is a smaller and slender insect, with the abdomen more gradually attenuated, independent of the aureous scutellum, (which is black in the other,) and other minute distinctions. *St. æriceps*, judging from my single specimen, stands in the same relation to *stercorarius* which *castanopterus* bears to *erythropterus*, being smaller and of a much more slender habit: in my example, also, the femora are black, and the pubescence on the *under* side of the abdominal segments aureous, that on the upper being dull silvery.

I believe it is an unnoticed fact that any Coleopterous insect preys on the wing; but I once observed a specimen of *St. erythropterus*, which I had taken in my hand on the wing and released, while it flew off in the bright sunshine; and I distinctly saw it make repeated darts at the gnats, as it rose in the air in spiral circles:—whether it caught any I could not perceive.

The three following species, *St. chalconcephalus*, *St. æneocephalus*, *St. cænicollis*?, form a very natural and closely allied group:—they are much more slender, in their general proportions, than those of the preceding section; and show an affinity, in their shorter and less powerful mandibles, smaller and more rounded heads, indistinct necks, and in the metallic gloss of the head and thorax, with the species standing at the head of the genus *Quedius*: and their approximation to this and the following genera is still further indicated by the rows of larger punctures on each side the thorax, which are more or less visible in all the three species, and particularly obvious in *St. chalconcephalus*. As I am

not quite certain of the correctness of my nomenclature, and as in many cabinets the three are confounded under the common name of *cænocephalus*, I shall add short characters of them as they are named in my own collection :

St. chalcocephalus : the broadest and stoutest of the three ; a slightly raised *concolorous* shining line between the antennæ ; “ head and thorax brassy, finely punctured, with very delicate pubescence, the latter glossy, with two rows of larger impressions, and four still larger on the lateral margin ;” elytra red-brown, with delicate brown pubescence ; abdomen clothed with a very delicate *pale* brown pubescence, with darker dots and longitudinal lines ; antennæ dark rufous.

St. ænicollis? the narrowest of the three ; antennæ pitchy-brown, inclining in some to ferruginous ; a raised *brassy-yellow* line between the antennæ ; head and thorax blackish brass, punctured, with two irregular rows of somewhat larger punctures on the thorax ; elytra deep pitchy ferruginous, paler at the suture and margins ; abdomen clothed with a short close brown pubescence, paler at the base of each segment, and with traces only of pale longitudinal lines.

St. cænocephalus : shorter than the others, and intermediate in width ; nearly uniform brassy-brown, pubescent, the abdomen obscure. The *St. sericeus* of Marsham, under which name a pair stand in Mr. Vigers’s cabinet now in the possession of the Zoological Society ; but one of these (a broken specimen) is, unless I mistake, *St. chalcocephalus*. Each species, it should be observed, has a narrow line down the middle of the thorax free from punctures.

My attention was first drawn to this subject by capturing at Ryde, in August, 1835, what I supposed a remarkably high coloured specimen of *St. cænocephalus*, but which I found on examination to agree closely with Mr. Stephens’s description of *chalcocephalus* : I considered this a great prize, as *chalcocephalus* was then marked † in the “ Illustrations,” but shortly after I picked up another in the streets of Bath, and on re-examining numerous Cornish specimens then standing in my cabinet as *cænocephalus*, they all proved to belong to either *chalcocephalus* or *ænicollis*? ; while on my subsequent visit to the Scilly Isles, I was unable to detect either of those species, though what I consider the true *cænocephalus* abounded in all parts of the group. All my specimens of *ænicollis*? are Cornish, but I have been shown several taken near Oxford : *chalcocephalus* appears to be found throughout

the country; I have taken it in Kent, Essex, Lancashire, Gloucestershire, Oxfordshire, and Ireland, besides the localities noticed above.

St. brunripes is apparently an autumnal species; it is very common under stones in September and October, but I scarcely ever took it earlier in the year. To the same section with it would belong a species which appears to be undescribed:

St. semipolitus mihi. Length $7\frac{1}{2}$ lines; black; head small, rounded, and, as well as the thorax, very glossy and polished, and somewhat distantly punctured, but on closer examination *numerous minute punctures are seen interspersed with the larger ones*; vertex of the head and dorsal line of the thorax nearly smooth; elytra dull brassy, with a few long hairs, minutely strigose-punctate, with a single very large puncture on the disk towards the apex, and one or two others towards the base; abdomen dull black, strongly margined, the penultimate segment narrowly edged with whitish; punctured, with two large punctures on each side of each segment; mouth and antennæ piceous-black; palpi rufo-piceous; femora and tibiæ brassy black, with a slight aureous pubescence; tarsi, especially the anterior, bright piceo-rufous.—I have taken three specimens, two in Christ Church Meadow, Oxford, and the third at Kemp-Town, near Brighton; it approaches nearest to *S. cantianus*, but is distinguished by the colour of the tibiæ: Mr. Waterhouse pronounced it decidedly new to England. I have not however had an opportunity of consulting the works of Gravenhorst or Mannerheim.

Britain has been considered by Messrs. Kirby and Spence to be the metropolis of the *Brachelytra*: and this is in some degree corroborated by the fact that the *Goërius olens*, which may probably be considered as the typical species of the whole division, though so abundant in Britain, is by no means equally common in any part of the European continent, and in Sweden, according to De Geer, is so rare that he never took a single specimen: and Linnæus was even led by its rarity to doubt its rank as a species, considering that it might be a variety of *Crocophilus maxillosus*, and denuded of its pubescence by age! Its habits are too well known to require any remark, and it carries its sanguinary disposition even into captivity, destroying its fellow prisoners without mercy if placed in the collecting bottle. I have frequently had occasion to remark the tacit homage paid to the prowess of this and even smaller *Brachelytra* by the *Harpalidæ* and other predacious families, which invariably take to flight at their approach;

the only exception to this which I remember to have witnessed was given by the maritime species *Brosicus cephalotes*, which I have seen defend its prey stoutly against *Creophilus maxillosus*.

The *Goërii* are monogamous: a pair is frequently found in a crevice, in the side of a quarry or gravel-pit, with their broad heads occupying the entrance of their den, ready to dart out on any hapless insect which may fall from the top.

None of the other *Goërii* appear to be very common: four or five years ago, when a tyro in Entomology, I took a remarkably fine specimen of *G. eyaneus*, near Broughton Hall, in Staffordshire, but unfortunately gave it away:—the only other species I ever met with are *G. punctulatus* and *G. morio*, neither of which are very uncommon in the west of England, particularly the Scilly Isles: these two species appear very closely allied, but those to which I have affixed the name *G. morio* are somewhat slenderer than the others, have narrower heads, and less blue gloss on the elytra. I found both species together, in company with *Ocypis*, on the shore, and often under coarse mould on the cliffs close to the sea.

The *Ocypis* are more elongated in form than any of the preceding genera, and their long abdomen has a serpentine lateral motion in running, which resembles that of a worm more than an insect. The species resemble each other very closely in form, and different specimens of the same species vary greatly in dimensions: my smallest specimen of *O. similis* is scarcely $4\frac{1}{2}$ lines long, my largest nearly 8 lines. *O. picipes* differs from it in little that I can distinguish except its somewhat greater breadth and bulk, larger head, and somewhat more glossy hue. *O. compressus*, of which I have a Cornish specimen, is distinguished by its bright ferruginous legs: *O. angustatus*, and *O. phæopus*, the two other species described by Mr. Stephens, I never met with.

Microsaurus lateralis, the *Quedius lateralis* of Stephens's "Illustrations," is apparently a very rare British insect, as he mentions only two indigenous specimens as being then known: I took, however, a fine specimen out of horsedung, in Gloucestershire, in September last. My specimen is scarcely five lines long: it is an insect of a remarkably short, broad, thickset figure, with a large head, powerful jaws, and very large eyes; the abdomen is short and broad, like that of *Emus hirtus*, but diminishing somewhat in breadth towards the apex: in my specimen there is a large puncture or foveola on the occiput, which is not mentioned by Mr. Stephens; and the deflexed edge of the elytra is not "pale

testaceous," but deep clay-colour, which colour does not appear on a vertical view.*

The *Quedii*, though closely allied to the *Philonthi*, have sufficient differences in habit to enable a practised eye to distinguish them at once; for, exclusive of the difference in the anterior tarsi, &c., their broader and rounder head, less distinct neck, and more attenuated abdomen, at once mark them. Their habits, too, differ from those of *Philonthus*; for, though some of the species are occasionally found in dung or decaying animal matter, the exclusive pabula of the *Philonthi*, the majority are found under stones, at the roots of grass, and frequently under loose bark on the branches of trees, where they prey on earwigs, woodlice, &c. Most of this genus, and also of the *Philonthi*, are much on the wing when the sun shines. As I have nothing of interest to mention relative to the habits of this genus, I shall proceed to give a few localities of the species noticed by Stephens as among the less common.

Quedius gracilis: Gloucestershire and Lancashire; not uncommon in dung.

Q. pyrrhopus: Gloucestershire, under stones; not common.

Q. hæmorrhous: under bark of trees, near Southend, and in Kent. I took many at Brome Park, the seat of Sir Henry Oxendon.

Q. hæmopterus: with the last, but less common; also in Gloucestershire, where I never found the other; the red on the elytra in both these species is much more vivid when alive than after death.

Q. suturalis: I have several specimens of this not very common insect, most of which were taken, if I remember right, in Cornwall and Devonshire, in dung, though I do not find it mentioned in my local catalogues. I have also taken it in Gloucestershire.

Q. erythropterus: in Lord Bathurst's park, near Cirencester, Gloucestershire.

The genus *Philonthus* is one of the most numerous, both in species and individuals, of the larger *Brachelytra*: they occur in profusion in every heap of dung throughout the summer and autumn, preying voraciously on the *Aphodii* and other coprophagous genera, and apparently destroying more than they require for food,

* Since writing this I have seen Mr. Curtis's beautiful figure: it appears that it has now been taken in many places; but it is to be regretted that Mr. Curtis should have selected it as an example of *Quedius*, since, even if we reject the genus *Microsaurus*, its figure differs considerably from that of the typical *Quedii*.

as I have often found ants carrying off the mutilated bodies of small *Aphodii*, nearly or quite severed, at the junction of the thorax and elytra, as if by the bite of *Ph. splendens*, or some one of the larger species, but otherwise untouched. The mention of ants in this place recalls to my mind a curious scene which I witnessed in the summer of 1833, near Sydenham, in Devonshire : a number of the large *horse-ant*, (I do not know the scientific name,) common in the west of England, were passing along the top bar of a gate, and in the midst of the procession appeared two or three ants carrying between them a living *Philonthus politus*, whose struggles for liberty appeared utterly fruitless ; for what purpose he was thus secured, or how the ants had succeeded in capturing an insect so well provided with means both of defence and escape, I had no means of ascertaining.

Some of the *Philonthi* are variegated with lively colours on the elytra, and nearly all the species are distinguished by the brilliant metallic polish of the head and thorax : they are active and lively insects, running with great rapidity, and flying well, mostly in sunshine. Some of the pilose species are infested by *Acari*. They all appear to be gregarious, and the different species are found together : the larvæ are equally predacious with the parent insects, which they greatly resemble in general form : that of *Ph. politus* has been figured by Mr. Westwood, in the Zool. Journal, vol. iii. pl. 2.

The two first species, *Ph. laminatus* and *Ph. æneus*, are considered by Mr. Stephens to be probably the two sexes of the same species ; the only difference I have been able to detect is that *Ph. æneus* is usually a trifle larger, and wants the prolongation, observable in the other, of the ante-penultimate abdominal segment :—*Ph. chalcæus* is also placed within brackets in the “Systematic Catalogue” as a possible variety of the same species ; but this I think is distinct : though nowhere common, I have taken it in Gloucestershire, Lancashire, and Cornwall. It is a smaller and more compact looking insect than the other, with the thorax rather more convex, and the sides of the head and thorax rounder ; and, when alive, the head and thorax show a rich rosy-copper gloss, not observable in the other.

I have a variety of *Ph. splendens* in which the head and thorax are glossed with rich steel blue instead of copper, and another in which the disk of the elytra is piceo-ferruginous, probably from injury in the pupa, as the insect appears fully mature. The number of thoracic punctures also in each series, on which Mr. Stephens has founded his sub-divisions of the genus, sometimes varies

in an anomalous manner : for instance, in a specimen of *Ph. politus* in my cabinet, instead of a double quadripunctate series, there are six punctures on one side, and only two on the other. I have an extraordinary monstrosity of this last species, with a raised tubercle in the centre of each elytron : this insect, which I took in Gloucestershire, stood for some time in my cabinet as a new species by the name of *Ph. mucropennis* ; but on showing it to Mr. Stephens, he pronounced it merely a variety of *Ph. politus*.

Most of the localities which I possess of this genus have been already given in my catalogue of the Penzance *Coleoptera* : I shall here therefore only remark that the species with spotted elytra, (*Ph. lituratus* and its allies,) which do not usually make their appearance in the midland counties till the middle of August, are found in abundance near Penzance in June : the mildness of the climate in Cornwall probably occasioning their earlier exclusion from the pupa. *Ph. bimaculatus* and *Ph. aciculatus* are much rarer than the other species of this section : the latter I have never taken ; of the former I found a few specimens near Penzance, and in the autumn of 1835 I took in Christ Church Meadow, Oxford, an insect, pronounced a variety by Mr. Stephens, in which the elytra had no regular spot, but a strong gloss of dull red pervading the apical half in some lights.

Ph. micans, which Mr. Stephens notices as rare, is taken not uncommonly in Christ Church Meadow, Bagley Wood, and the neighbourhood of Oxford generally : some specimens greatly exceed the length of $2\frac{1}{2}$ lines assigned by Mr. Stephens.

The beautiful species comprised in the genus *Raphirus* bear so much greater affinity in habits and general appearance to *Quedius* than to *Philonthus*, that I am surprised the latter genus should have been interposed between them ; for it appears to me that the chain of affinity in forms would be more obvious and complete, if the *Raphiri* were made the link between the smaller *Quedii* and the more slender species of *Philonthus*, as *Ph. marginatus*, *lituratus*, *micans*, &c., now placed at the end of the genus, while the species with broad heads, as *Ph. æratus*, *puncticollis*, *sericeus*, &c., would more naturally conduct to the *Bisnii*, *Cafii*, and other large headed genera arranged towards the end of the *Staphylinidæ* :—but this suggestion is made with all due deference and submission to the opinion of more scientific entomologists.*

The great attenuation of the abdomen, (resembling that of the

* The above was written before the appearance of Mr. Stephens's "Manual," in which *Raphirus* is placed between *Quedius* and *Philonthus*.

Tachypori, &c.) and the changeable gloss of the pubescence, render this genus distinguishable at the first glance : none of the species appear to be numerous in individuals, and different specimens vary considerably in size and brilliancy : one of my specimens of *R. semiobscurus* is nearly $5\frac{1}{2}$ lines in length.

R. boops has been several times taken near Oxford by my friend A. Matthews, Esq.

R. rufipennis I took in the Scilly Islands, the only species of the genus which I found there during my short stay : the golden gloss of the pubescence gave the insect a most beautiful appearance when alive.

R. semiceneus I have taken in Gloucestershire, and I think in Cornwall also, but I do not find it in my local catalogue.

The *Bisnii*, though found, as remarked by Mr. Stephens, as well under dung as under fungi, seem never to occur at any distance from the coast : I never took a single specimen inland. *B. cephalotes* I found in considerable plenty at Southend, in July last.

The different species of *Cafius* occur in great plenty under seaweed, in all parts of the coast, but are so exclusively maritime in their locality that I never saw a single one beyond the limits of the sea-beach. They are highly predacious, and are well fitted for rapine by their broad heads and long jaws armed with powerful dentations : on turning up a heap of sea-weed, they may frequently be seen, particularly when the sun shines, to spring into the air after the flies thus disturbed, aiding their dart by a momentary expansion of the wings. Their voracity does not even spare their own species : the larger specimens prey on the smaller without mercy, and I have seen two leave a common prey untouched while they fought for its exclusive possession. They burrow with great agility under the loose sand when alarmed, their flattened body, and expanded and pilose anterior tarsi, being admirably adapted for making their way through this loose material : though they frequently content themselves with merely thrusting their heads under a pebble and remaining motionless, apparently thinking, as popular belief attributes to the ostrich, that they are thus effectually concealed.

The distinguishing characteristics of the different species in this genus have somewhat perplexed me, from the great variation observable in different specimens : the first species, *C. fucicola*, I have never been able satisfactorily to identify among my specimens : and I have sometimes doubted whether the two next, *C. xantholoma* and *C. lateralis*, might not in reality form a single

species, as the anterior puncture in the thoracic series, which is one of the distinctive characters insisted on by Mr. Stephens, varies so much in size and position as to be but a doubtful criterion: and of the frontal punctures on the head, the apparent presence or absence of the external one seems to me to depend on the greater or less elevation of the scape of the antenna, which, when it stands out much in relief, as it does in some specimens, gives the appearance of a large puncture or foveola on the inner side; while in others it scarcely rises above the level of the head. The general dimensions, and the relative proportions of the heads and mandibles, vary in different individuals as much as they do in *Creophilus maxillosus*: and it is possible that all my specimens may truly belong to one species, and that I may not yet have seen an authentic specimen of the other.

The two other supposed species, *C. littoralis* and *tessellatus*, are certainly mere immature varieties, as Mr. Stephens has placed them in the "Illustrations:" I have observed them in all the intermediate stages of colour: and should my preceding views as to the identity of *C. xantholoma* and *lateralis* prove correct, I suspect that the former, from the general darker colour and obsolete pubescence, will be found to be the old specimens.

Of the *Gabrii* I have only to add a locality for *G. pallipes*, which is common in Christ Church meadow, and elsewhere, near Oxford. A. Matthews, Esq., lately informed me that he has detected an entirely new form, which will take its station near *Gabrius*, but differs in having the tarsi greatly dilated, and in other characters: but I have not seen the insect.

The larger *Gyrophypni* appear to affect by preference maritime situations: even the commonest species, *G. cruentatus*, does not occur in any great numbers inland, while on the shores of Mount's Bay I found it swarming under horsedung on the beach, and decidedly more common than any other of the large or middling sized *Brachelytra*: it occurred in equal profusion at Ryde, Weymouth, and Portland Island: in the Scilly Islands I did not meet with it, but I should feel little doubt of its occurring there. The Cornish specimens of *G. tricolor* almost equalled the above-mentioned species in size.

Mr. Curtis, in the late volume of the British Entomology, has figured the supposed variety of *Lathrobium quadratum*, with a red dot at the apex of the elytra, as a species, by the name of *L. terminatum*, of Gravenhorst, indicating it, however, as probably only a variety of *L. quadratum*. I never took this insect myself, but Andrew Matthews, Esq., who takes it in considerable numbers at

Weston-on-the-green, tells me that he has no doubt of its being merely a variety of *L. quadratum*, both insects occurring together in the same situations and in nearly equal numbers, and never being found separately. May not the dot be a sexual distinction? The dotted specimens given me by Mr. Matthews appear a trifle broader than the undotted ones taken by myself.

The following species of this genus, indicated by Mr. Stephens as among the less common, are found in Christ Church Meadow, and elsewhere, near Oxford: *L. punctulatum*, *longulum* (rather common), and *fovulum*.

I have never seen any notice of the singular manner in which the common little species *Astenus angustatus* carries its antennæ in running: they are bent almost into a semicircle, the tips almost touching each other, and incessantly vibrating as in the *Ichneumon* tribe: I have not noticed this peculiarity in any of the neighbouring genera.

I have seen some specimens of *Pæderus littoralis* in which the mandibles were piceous instead of red, probably old insects: it may always however be recognized by its more slender figure, smaller head, and oblong thorax, as well as by its somewhat brighter colouring, from its nearly allied congener *P. riparius*. In habits also it appears to present some difference, as I found it in Cornwall running on the stems and leaves of osiers, &c. in considerable numbers, whereas *P. riparius* is seldom found except on the ground. I have a specimen, apparently belonging to *P. riparius*, but so nearly intermediate in form, colour, and proportions, that I was for some time puzzled where to place it.

Of the rare and elegant *P. fuscipes* I took a single specimen, in August 1835, on the sands near Ryde, in company with *riparius* (not *littoralis*), but the difference in habit and general aspect was obvious at a glance. I never met with either *P. ruficollis* or *P. sanguinicollis* in England: but I have received several specimens, agreeing closely with Mr. Stephens's description of the latter, from Denmark and Norway, by the name of *P. collaris*: one specimen was marked Kiel, and I believe it is common in Sweden. I may mention that I have often seen the *Pæderi* engaged in wiping the palpi, inside of the mandibles, base of the antennæ, &c. with the claws and dilated tarsi of the fore feet, with as scrupulous care as a cat washes her face: I have also seen *Staphylinus erythropterus* similarly employed.

The determination of specific titles in the genus *Stenus* is nearly as difficult as among the *Aleocharæ*, from the great number of species, and their general similarity of colouring. Most of them

are gregarious: *St. nigriclavis*, *rufitarsis*, &c. are found in great numbers in winter, collected together in loose earth at the roots of trees in Christ Church meadow.

Stenus flavipes, *St. pubescens*, and *St. Kirbii*, are taken by Mr. Matthews at Weston-on-the-green: the last named species I myself took at Southend and Sheerness last summer; when I had an opportunity of verifying a fact mentioned in the "Entom. Edin." on the authority of Mr. Bainbridge, that "individuals thrown on the water dart like *Velia* or *Gerris* eighteen or twenty inches along the surface," a mode of escape which I saw *St. Kirbii* voluntarily have recourse to.

The following of the less common species I have taken in Gloucestershire and Oxfordshire: *geniculatus*, *lineatulus* (not uncommon), *buphthalmus* (here less common than the preceding), *cicindeloides*, *unicolor* (not common), *similis*, and *picipes*. *S. biguttatus* is also taken at Weston by Mr. Matthews.

On the succeeding genera of the *Stenidæ* I can only add a locality or two; but I cannot omit to notice the inveterate misspelling which has [much] obtained in this country of the name of Mannerheim's genus *Platystethus*, which, in defiance of its obvious derivation, πλατυς, broad, στήθος, breast or thorax, seems to have naturalized itself in England as *Platysthetus*, a name expressing nothing in Greek, or, as far as I am aware, in any other language: the universal adoption of this error is really a slur on the classical knowledge of [some of] our Entomologists.

Pl. immunis, and *Pl. foveatus*, occur in autumn in Gloucestershire.

Pl. pallidipennis is taken by Mr. Matthews at Weston-on-the-Green: in recent specimens the pale part of the elytra is nearly white, and its boundary well defined; the shoulder is always dusky, joining the other colour in a diagonal line: in old specimens there is only an indistinct pale patch in the middle of the elytron, surrounded on all sides by dark piceous.

Oxytelus picipennis is not uncommon in Gloucestershire.

Mr. Stephens speaks of the *Platystethi* and *Oxyteli* as occurring "at all times, especially in the spring and early summer months:" it would appear that their exclusion from the pupa takes place about the beginning of autumn, as they make their appearance in dung in multitudes towards the end of September, when the numbers of the *Philonthi* begin to diminish; they are the latest of all coprophagous *Coleoptera* to disappear at the approach of winter, and the earliest in their re-appearance in

spring, except perhaps *Aphodius testudinarius*: from June to September they are seldom seen.

Trogophlæus arcuatus occurs near Oxford, and I believe others of the genus, but many of my specimens are yet unnamed.

Evæsthetus scaber is found near Oxford, but not common; my specimens are not black as described by Mr. Stephens, but rather testaceous brown with glossy black elytra.

Lesteva impressa is taken by Mr. Matthews at Weston: the specimens vary much in intensity of colour, from brown or pitchy black to dull testaceous yellow.

Since the above notes were written, some additional remarks have occurred to me, which I shall here append.

Many supposed species have been reduced in Mr. Stephens's new "Manual" to the rank of varieties: and an inspection of the original specimens on which many of the species were founded, in Mr. Kirby's collection now possessed by the Entomological Society, convinces me that this reduction requires to be still further extended. Many of these typical specimens are obviously only immature states of well known species; but the notes which I made on this point were unluckily lost. *Gabrius ventralis* I however remember is an immature specimen of one of the common species, with the segments of the abdomen much extended in setting.

Quedius atriceps, *Q. Lathburii*, and *Q. inquinatus*, have occurred near Oxford.

Raphirus nigricornis mihi. Length barely two lines; antennæ rather thickened, black; head and thorax shining glossy black; head suborbiculate; thorax with two punctures placed obliquely on each side the disk, and a few others, connected together, close to the outer margin; elytra pubescent, pitchy brassy-black, the apex reddish; abdomen pilose, obscure black, edges of the segments reddish, and of the penultimate one white; legs black; tarsi piceous. This appears to be distinguished by the colour of the legs and antennæ from all others of the genus, except perhaps *R. fuscipes*, which differs in size and other particulars.

Philonthus cyanipennis. I purchased a pair of insects which appear to correspond with this species at Mr. Swainson's sale, on which the habitat was marked New York. Dr. Leach's only specimen was taken near Swansea, and the examples in the British Museum are from France and Switzerland.

Philonthus coruscus. In his description of this species, Mr. Stephens omits to notice that the scutellum, suture, and base of the elytra narrowly, are brassy black; and the occurrence of these distinctions in the specimens which I took in Scilly, led me to doubt whether my insects might not be distinct, till I ascertained their identity by comparison with Mr. Kirby's specimens.

Gabrius villosulus has occurred near Meysey Hampton in Gloucestershire, where I have also taken *Gyrophypnus tricolor* of even larger size than the Cornish specimens.

I find that I was wrong in supposing that Mr. Rudd had taken the insect which I characterized in the Ent. Trans. ii. 64, as *Remus sericeus*, on the coast of Yorkshire: his specimens were from the Isle of Wight, and I am indebted to him for the knowledge of a sexual distinction—the male having the last abdominal segment notched beneath. Mr. Shuckard (Elements of Entomology, i. 110) considers that it “differs too slightly from *Cafius* to constitute a distinct genus;” and with *Cafius* he accordingly places it: but independent of the differences in the trophi, &c., I think the contrast between the polished thorax of *Cafius* with its double row of large punctures, and the closely punctured one of *Remus* with its dorsal callus, too great to admit of their being placed together: and Mr. Stephens (in the “Manual”) has sanctioned its establishment as a genus, placing it between *Heterothops* and *Othius*. Mr. Rudd had distinguished the specimens which he placed in the British Museum by the MS. name of *Menapius grisescens*.

I have noticed that most of the *Lathrobia*, in alarm or death, double the long flexible end of the abdomen *under* the body instead of *over* it.

Omalius mesomelas mihi. Size and dimensions of *O. sordidum*, of which it may possibly be a very high coloured variety; bright rufous; head black; disk of elytra suffused with deep cyaneous. It resembles in colour *O. iopterum*, but is a much wider insect. Near Meysey Hampton, Gloucestershire, in a rotten oak-stump, Sept. 1838.